REPORT OF INDEPENDENT INVESTIGATION

OF

MAJOR AIRCRAFT ACCIDENT INVOLVING

A3D-2 BUNO 138956

ONE MILE SOUTH OF

NAVAL AIR STATION, SANFORD, FLORIDA

ON

6 JULY 1957

REPORT OF INDEPENDENT INVESTIGATION OF MAJOR AIRCRAFT ACCIDENT INVOLVING LT HENRY C. WHITE, (b) (6) [redacted] USN, IN A3D-2 BUNO 138956, ONE MILE SOUTH OF NAVAL AIR STATION, SANFORD, FLORIDA ON 6 JULY 1957

THE ACCIDENT

1. A3D-2, BuNo 138956 assigned to Heavy Attack Squadron NINE (VAH-9), Naval Air Station, Sanford, Florida crashed and burned at 2037 EST on 6 July 1957 approximately one mile south of NAS Sanford. All four crew members were fatally injured in the crash. There was no damage to private property. The aircraft sustained strike damage in the crash. The mission of the flight was night field carrier landing practice utilizing the "mirror". Landings were monitored by a qualified Landing Signal Officer.

CONCLUSIONS

2. It is concluded that:

a. The cause of this accident is undetermined. (See paragraphs 9,10,11,12,13, 14,15,16,17,18,19,20,21,22,23,28,29,30,33)

b. The A3D fourth crewmember installation is unsatisfactory. (See paragraphs 24,26)

c. The practice of embarking personnel not required to accomplish the mission of field carrier landing training is unsound. (See paragraphs 24,26,27)

d. An angle of attack indicator should be installed in A3D aircraft. (See pragraphs 13,14)

e. The squadron working spaces at NAS Sanford, Florida should be air-conditioned. (See paragraph 34)

RECOMMENDATIONS

3. It is recommended that:

a. BUAER require the contractor to submit an ECP to increase the ultimate strength of the fourth crewmember seat, lap belt, shoulder harness installation withstand the following accelerations; 40 g aft and 20 g upward.

b. The embarking of a fourth crewmember in A3D aircraft be prohibited until a seat, lap belt, shoulder harness installation meeting the above ultimate strength requirements is provided.

c. CNO cause OPNAV Instruction 3710.7A, Section VIII, f. to be revised to include field carrier landing practice.

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d. BUAER expedite installation of an angle of attack indicator system in A3D aircraft.

e. The practice of low altitude in-flight pilot/copilot seat changes be restricted.

f. Suitable air cooling and/or air circulating equipment be made available to NAS Sanford for installation in fleet working spaces.

HISTORY OF FLIGHT

4. A3D-2 BuNo 138956 was scheduled for a night FCLP on Saturday 6 July 1957. The pilot, LT Henry C. WHITE, USN was assigned to fly the first half of the period and CDR Charles W. CARMEN, USN the second half. The pilots were to change positions in flight in accordance with squadron policy. Two crew members J.J. MONACO AQ1 and E.O. SEAMAN AT2 were also aboard. The aircraft became airborne at 2015R and shortly thereafter the pilot called the Landing Signal Officer. He reported that he had "meatball" and would make a non-touchdown pass because of weight. Two overweight passes were made and then three touchdown passes were flown on runway 27. All passes were reported "OK" by the LSO except the first which was high and fast. The aircraft fuel weights as called in by the pilot were:

PASS	FUEL WEIGHT
1	12,800#
2	12,200#
3	11,500#
4	10,900#
5	10,200#

There were no further transmissions received following the fuel check on the fifth pass. The LSO observed the aircraft during take-off on the fifth pass. It climbed to about 150-200' altitude straight ahead and appeared normal in all respects. His attention was then diverted to the plane in the groove. About twenty two seconds later, an A3D called LSO and reported a plane had crashed about one mile south of the air station at time 2037R. Fire fighting units from NAS Sanford extinguished the blaze in about ten minutes

INVESTIGATION AND ANALYSIS

5. Two Naval Aviation Safety Center Investigators arrived at NAS Sanford, Florida at 1230 EST, 8 July 1957. A preliminary conference was held with squadron personnel and representatives of Douglas Aircraft Company immediately upon arrival. At this time witness statements were reviewed, possible causes were discussed, and plans for the conduct of the investigation were formulated. The scene of the crash was under

military guard and the wreckage had not been disturbed except as required to extinguish the fires and remove the bodies of the crewmembers. Pathological examination of the bodies had been requested.

INVESTIGATION AND ANALYSIS

6. According to line personnel, the A3D-2 made a sharper than usual left turn (30° +) during climbout from runway 27. The aircraft continued in a left turn for about ¼ mile to about 300' when according to witnesses the aircraft rolled sharply to the right. This rotation was abrupt enough to be called a "flip" by observers. The recovery from this turn was very slow and made in a descending attitude. The aircraft continued to descend on a heading of 180 degrees over the air station boundary. Shortly thereafter the aircraft struck the trees in a right wing down attitude (45°) and an angle of impact of 20 degrees. The right wing dragged along the ground for about 75 feet (124 feet past initial contact) which caused the plane to yaw to the right. Disintegration of the aircraft commenced at about the 130 feet mark when it passed through a large oak tree. The right engine and pylon struck the ground causing the plane to become inverted and it bounced into the air in this condition landing inverted about 500-600 feet from initial contact. The disintegration of the aircraft resulted in three major portions being partially intact, the right wing and center wing section, the left wing and the empennage. The port engine was detached and rested on top of the right wing. The starboard engine was positioned alongside the port wing. Parts of the aircraft were strewn from the 100' to the 600' marks. The swath made by the aircraft measured 30'-40' wide and was made on a bearing of 235° true. From the time the left turn was started from runway 27 the aircraft had traveled about one mile in about 20-25 seconds.

7. Preliminary examination of the wreckage at the scene revealed the following:

a. All major structural extremities of the aircraft were present at time of impact.

b. All control surfaces and landing flaps were present at the time of impact.

c. There was no evidence of in-flight fire or structural failure.

d. The landing gear was down and locked.

e. The landing flaps were down by not fully extended.

f. The speed brake actuating cylinders were in the closed position.

g. The center of gravity valve was in the open position.

h. Both engines showed signs of rotation at time of impact.

i. One (1) bleed valve on the starboard engine was observed to be in the closed position indicating that high power was being developed.

j. All oxygen regulators were in the 100% position.

k. Both wings were locked.

l. The vertical stabilizer was locked.

8. The center console was found with very little damage sustained. The position of the various components was as follows:

a. Throttles full forward

b. Flaps up - it was noted that wood was impaled on the upper stop section of the control mechanism in such a manner that the handle had to be in neutral or the down position just prior to impact.

c. Emergency hydraulic pump - off

d. Oil coolers - open

e. Battery - on

f. Gust locks - off

g. Master switches - on

h. Dive brakes - in

i. Landing gear - down

j. Hytrol - on (anti skid brakes)

9. Fuel starvation was considered as a possible cause for the accident and the following was revealed in the investigation. The aircraft was fueled with 14,300 pounds of fuel. The forward and aft fuselage tanks were dip-sticked and the aft tank contained 8775 pounds, the forward 5525#. Fuel consumption in the field carrier landing pattern averages 6250 pounds per hour which is also borne out by the pilot transmissions to the LSO. This rate of fuel consumption eliminates the possibility of fuel starvation due to failure of the center of gravity control valve. The duration of flight was only 21-24 minutes which would still have left fuel in excess of 4000 pounds had the fuel been taken from the aft tank only.

10. Both the port and starboard pylon fuel boost shut off valves were located and found to be in the open position. The fuel crossfeed shut off valve was located in the wing center section and was in the closed position. The port and starboard fuel pump outlet shut off valves were not located in the wreckage. These valves as well as the pylon fuel boost shut off valves are operated by integral electric motors and are controlled by the engine master switches. In view of the five successful landing approaches accomplished and the open position of the pylon valves, it is reasonable to assume that the fuel pump outlet valves were also in the open

position at the time of the crash.

11. Initial examination of the power plants at the scene indicated that both were rotating at impact. They showed evidence of having been subjected to several impacts and one had suffered considerable ground fire damage. The engines were shipped to NAS Norfolk for disassembly and inspection. Preliminary reports indicate that both were developing high rpm at impact and operating at approximately the same rpm. Examination also revealed that both hot sections and turbine assemblies were in good condition. All bearings were inspected and showed no evidence of oil starvation, overheating, or stress.

12. Examination of the wing flap actuating system was made. All portions of the torque tube were recovered and showed no damage other than that resulting from impact. Measurements taken of the position of inboard torque tube corner mechanisms indicate that the wing flaps were extended slightly less than one-half after impact. The flap system incorporates a blow-back relief valve in the down line and is set to open at 3400 psi, to relieve excess pressure in the line and permit the flaps to retract as necessary to prevent damage under heavy air loads. The hydraulic flap actuator cylinder was removed, disassembled, and inspected. It had been subjected to the area of most intense ground fire. Upon disassembly it was noted that the hydraulic fluid had burned within the cylinder leaving a powder like grit-free ash. The piston was free to move and upon inspection was undamaged. The cylinder was milled longitudinally in order to inspect the inner surface. No Brinell marks were present to establish the position of the piston at impact. The burning which took inside the cylinder did leave a pattern which established the position of the piston as being approximately half flaps at the time the cylinder was subjected to fire and high temperature. The port flap stop arm and down stop belt were located and showed Brinell marks indicating that the flap was full down at the time of impact. The starboard flap stop arm was not present on the wing and could not be located. The starboard flap track was located and examined but failed to reveal evidence indicating flap position at impact. The port flap track was not located. The flap torque tube had failed approximately one foot outboard from the inboard side of the port flap. When the two pieces of torque tube were placed adjacent to each other it was determined that the flaps were not split at the time of impact. Both spoilers were found in the closed position.

13. Since there is insufficient factual evidence to definitely establish the position of both wing flaps at the time of impact the following is reported. The squadron policy is to conduct field carrier landing practice with the landing gear and wing flaps full down throughout the flight. Wheels and flaps are left down even while changing pilots in-flight. This would tend to support the evidence that the flaps were full down. Also, the pilot had made five approaches, monitored by the landing signal officer, and was observed to be "OK" in all but the first approach. Stall speed of the A3D increases approximately five knots when half flaps are used instead of full flaps. (b) (5) [redacted]
(b) (5) [redacted]
(b) (5) [redacted] The aircraft was manned by another qualified naval aviator, acting as co-pilot in the bombadier-navigator crew position, who would be monitoring the pilots actions. (b) (5) [redacted]

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(b) (5)

[redacted]

14. The practice of slowing a modern high performance aircraft to the speed of buffet onset to determine the proper landing approach airspeed is viewed by the investigators with incredulity. It seems inconceivable that the first line attack bomber of the Navy is not equipped with an angle of attack indicator. An angle of attack indicator would not only eliminate the need for this action but would give the stalling angle for the turning portion of the approach as well as unaccelerated flight. The instrument would also be of a great value during cruise, allowing the pilot to utilize the optimum angle for maximum range and maximum endurance. In an aircraft with as great a range of operating weights as the A3D the angle of attack indicator is invaluable.

15. The control system was damaged to the point where reconstruction was impossible however control actuators and control valves were examined. No evidence of failure or malfunction was found. The rudder trim actuator was recovered and indicated approximately neutral trim. The position of the horizontal stabilizer actuator jack screw indicated that the stabilizer was positioned full aircraft nose up at the time of impact. The a-c and d-c elevator trim motors were tested and both operated properly when power was applied. The aileron tandem actuator, spoiler actuators and control valves were sent to Douglas Aircraft Corporation for testing. No evidence of malfunction was found. The full nose up position of the stabilizer was examined as a suspect area. Interrogation of squadron pilots revealed that certain of them usually flew the entire field carrier landing pattern with full, or almost full nose up trim. They further stated that at indicated air speeds of less than 150 knots the control pressures arising from such a trim condition were very light and that they preferred to fly in this condition rather than constantly retriming. At landing IAS the control pressures were reported to be neglible.

16. Detailed examination of the aircraft structure at the scene and after recovery indicated that all portions of the aircraft, except those dislodged upon initial contact with the trees, were with the aircraft at the time of impact. All of the extremities were accounted for at the scene of impact. Examination of fractures in the major structural components indicated that they were of the type associated with impact damage. There was no evidence of in-flight fire. Because of the complete destruction of the airframe there was no attempt made to reconstruct the aircraft from a dimensional standpoint.

17. Examination of recovered cockpit portions revealed no evidence of fire in the cockpit. Portions of the cockpit carpet, center control pedestal, personal oxygen masks, and oxygen regulators were examined and were intact and clean.

18. Examination of the air turbine motors was accomplished with the assistance of contractor design engineering personnel. The following brief description is offered for clarity. The A3D is equipped with two accessory drive units (ADU's) comprised of air turbine motors (ATM's), gear trains, and mounting pads. Those are driven by

compressor bleed air and provide necessary power for driving the A-C and D-C generators, the utility hydraulic pumps and the flight controls boost pumps. The No. 1 ADU drives the number 1 d-c and a-c generators, the aileron power boost pump and a utility hydraulic pump. The No. 2 ADU drives the No. 2 d-c and a-c generators, the rudder-elevator boost pump and a utility hydraulic pump.

19. Detailed examination and disassembly of the ADU's revealed both were operating at the time of impact. This was evidenced by scoring and impact marks on the turbine wheel shroud. Impact marks of the variable area nozzles on the scroll verified the position of the nozzles as open at impact. Aluminium from the rubbed shrouds was deposited on the nozzles. The bearings were examined and were in good condition. The quill shafts of the number 1 a-c and d-c generators were parted in pure torsion. The turbine quill shaft of the number 2 ADU was parted in a classic example of pure torsion. The number 1 hydraulic pumps were examined and were in good condition although they had parted from the gear box upon impact. The number 2 hydraulic pumps were not located. The number 2 ADU had been in an area of most severe burning and the lower portion of the magnesium case was burned away. All evidence indicated normal operation of both ADU's at the time of impact. Test conducted by the contractor, have shown that the time required for the ATM's to come to a complete stop following any loss of bleed air, under a hydraulic and electrical load similar to that present at the time of this crash, is approximately five seconds. The evidence of rotation present in these units indicates that bleed air was available at the time of impact.

20. The electrical system was examined but due to the nature of the impact and the magnitude of destruction any final check was impossible. Examination of wire bundles, cable runs, component, etc., failed to reveal any evidence of electrical fire other than that suffered in the fire subsequent to the crash. In so far as could be determined, there were no indications of short circuits nor malfunctions of any electrical components recovered and examined. The fact that d-c power was present immediately prior to the crash is evidenced by witness statements that the aircraft exterior lights were seen throughout the flight path. The d-c power could have been battery supplied as the wheels were down. This energizes the secondary bus which supplies battery power to the exterior lights even with the electrical power switch in the BATT position.

21. Witness statements and reconstruction of the flight path prompted investigation of the possibility of a stall/spin after take-off. LT WHITE was known to habitually fly slow during field carrier landing practice. The last maneuvers of the aircraft were described by witnesses as a steeper than usual left turn after take-off followed by an abrupt, or flip, turn to the right and a loss of altitude. This description sounds suspiciously like a stall/spin evolution. Investigation revealed that the A3D stall warning is early and positive under all flight conditions. When landing gear and wing flaps are extended, airframe buffeting starts 15-20 knots above the stall. No appreciable roll is experienced at the stall but buffeting begins moderately and increases alarmingly as the complete stall is approached. Squadron pilots reported rarely flying the aircraft to a complete stall because of the severity of airframe buffeting and vibration as the stall is approached. Aileron control is

reportedly low during the stall but yaw/roll can be controlled with the rudder. The only unusual characteristic reported in an accelerated stall is a tendency for the airplane to dig into the turn. In view of the emphatic aerodynamic stall warning which preceeds the stall it is improbable that the pilot could have inadvertently stalled the aircraft.

22. Pilot disorientation was considered as a possible cause for the accident. Although the possibility cannot be completely discounted it is considered that the probability is slight. Weather conditions the night of the accident were ideal for flying. The moon was almost full, visibility was reported as twelve miles, and the horizon was well defined by moonlight and lights from surrounding communities. Other pilots in the air at the time of the accident stated that flying conditions were almost as good as those encountered during day flying. They further stated that failure of flight attitude instruments would not have been confusing in view of the excellent visual conditions prevailing that night.

23. The possibility of pilot incapacitation was considered. The Flight Surgeon stated that he had intimate knowledge of LT WHITE's physical condition, having recently treated him for a cold contracted while attending survival school. He had been grounded for six days for this ailment but recovery was complete, chest X-ray taken three weeks prior to the accident. An electrocardiogram taken at JTTU, Olathe, Kansas in November 1956 was normal except for rare auricular premature contractions. The Flight Surgeon examined his chest 10 days prior to the accident and stated that the heart sounds and rhythm were entirely normal to auscultation. Careful muliple section of the coronary arteries and inspection of the ostia at the time of autopsy revealed normal arteries with very minimal changes; at no point was there any narrowing, and the gross appearance of the heart muscle was entirely normal.

24. All recovered safety equipment was inspected to determine its effectiveness. Examination revealed that the lap belts and shoulder harnesses were properly used. In all cases the buckles were still fastened and the harness webbing and fittings were intact. The forces exerted on these items resulted in their being torn from their respective attaching fittings. Particular notice was taken of the fact that no interia reel take-up mechanism is provided on the fourth crewmembers shoulder harness. Investigation of the provisions for carrying of a fourth crewmember revealed that A3D Aircraft Service Change No. 91 authorized installation of a harness assembly and a lap belt at the crew relief station. The relief station is located aft of the bombadier-navigator seat forward of fuselage station 204. A3D detailed specifications for seat and safety belt design are quoted in part, ..."an intertia lock type shoulder harness take-up mechanism, approved by BUAER and designed in accordance with Spec AN-R-29-2 shall be provided and mounted to assure maximum operating protection. Ultimate strength shall be incorporated in the entire seat and safety belt installation and carry through structure for the following accelerations of the airplane acting indepenently along the airplane reference axis, 40 g aft and 20 g upward..." The fourth crewmember seat installation does not conform to these specifications, having no inertia lock type shoulder harness take up mechanism and an ultimate strength of 20 g's. Although the installation is not a causal factor in the death of the fourth crewmember, it is considered unacceptable. All crewmen are in need of and entitled to the same degree of protection.

25. The following was noted regarding other personal safety equipment.

a. Helmets. Three crewmembers wore the new APH-5 helmet, the fourth crewman a H-4. Two of the APH-5 helmets were relatively intact, one had the chin strap torn from its mounting screw, the other was shattered on its left lateral aspect. The third APH-5 helmet was completely shattered and scattered in the cockpit debris. All helmets were off the skull at the accident scene and all crewmembers suffered comminuted skull fractures.

b. Shoes. Three crewmembers wore field shoes. Two shoes of one member and one of another were torn off. The pilot wore low-cut shoes which were both torn off.

c. Flight Gloves. None of the crewmembers wore gloves. Although they would not have prevented injury in this crash they should be worn by all crewmembers.

d. Flight Suits. All crewmembers wore summer flight suits. They offered no portection from the burning fuel in the ground fire. The only unburned portions of the bodies were those in contact with the ground.

26. The presence and/or need for the third and fourth crewmembers in the A3D during field carrier landing practice was questioned by the investigators. It was stated that squadron policy dictated their flying on such a mission for training purposes. While it is recognized that training of aircrewmen is vitally important it is considered that the value of training received by aircrewmen during field carrier landing practice is questionable. It is a known fact that more accidents occur in the landing and take-off phase of operation than in any other phase. The need for carrying non-essential crewmembers during field carrier landing practice should be closely evaluated to compare the value of training received against the extra hazard encountered. OPNAV Instruction 3710.7 A, Section VIII, f., which prohibits the embarking of non-required personnel during certain hazardous flight missions should be revised to include field carrier landing practice. OPNAV Instruction 3710.7A also states in part, ... "the number of persons embarked in Naval aircraft for flight shall be restricted to the number for which there are adequate seats and safety belts and/or ditching stations...". The present fourth crewmembers station in the A3D is not considered adequate in this type aircraft from a shoulder harness, safety belt viewpoint, nor as a ditching station.

27. During the investigation it was learned that the practice of changing pilots while airborne is a common practice. This is done most frequently during familarization flights and field carrier landing practice flights when the aircraft is manned by two designated naval aviators. Discussions with pilots and examination of the cockpit revealed that the aircraft is, for all practical purposes, momentarily not controlled while this pilot change is effected. While this practice has been commonly accepted through the years in patrol and transport type aircraft it is not compatible with high speed, swept wing jet operation. This practice in single piloted aircraft should be reviewed by cognizant commanders to determine the need versus the obvious hazard. In the A3D, where fuel available permits the making of 12 or 14 field carrier landing during one period, the safety factor involved in changing pilot

positions on the ground rather than in the air should be carefully scrutinized relative to the training value of one or two additional practice landings.

28. Lieutenant Henry C. WHITE, (b) (6) USN was 33 years old. He was designated a Naval Aviator on 15 November 1950. He held a standard instrument rating and had accumulated a total of 1688 flight hours. His total jet flying time was 125.4 hours, of which 73.4 hours were first pilot hours. He had flown the A3D a total of 58.9 hours, of which 48 hours were first pilot hours. He was a designated A3D plane commander on 29 April 1957. He had made approximately 100 mirror field carrier landings in the A3D prior to the accident. Lieutenant WHITE was a graduate of JTTU, Olathe, Kansas and of the FAWTU instrument flight course. He had received training in the A3D mobile maintenance trainer and the A3D operational flight trainer. He had recently graduated from the Aviation Safety Officer's School at the University of Southern California, and was the squadron safety officer.

29. Discussions with the Commanding Officer, squadron personnel, the Flight Surgeon, and mobile maintenance trainer personnel revealed the following concerning LT WHITE. He was considered to be an above average aviator, well motivated, and interested in flying. He was in good health and of a temperate nature. Maintenance trainer personnel stated that he displayed an excellent to outstanding knowledge of various systems in the A3D and was adept at recognizing, analyzing, and handling simulated emergencies. He was a second tour pilot, having gained experience in carrier aviation while serving in an AD squadron.

30. Discussions with the Landing Signal Officer, who had previously served with LT WHITE in an AD squadron, and other squadron pilots revealed that he usually flew the A3D at slow air speeds in the FCLP pattern. This slow flying characteristic had been noted by the LSO during the pervious tour in the AD squadron. The Landing Signal Officer stated that his slow flying may have stemmed from his attempts to fly a constant speed pattern within limitations. One squadron pilot who flew as co-pilot with LT WHITE during an FCLP flight stated that this slow flying caused him to feel uncomfortable. This reaction, of course might be expected as individual pilots develop their own flying habits and are prone to be somewhat critical of those of other pilots which are dissimilar.

31. A3D BuNo 138956 was accepted by the Navy on 4 April 1957. It had flown a total of 67.4 hours. The last maintenance inspection was on acceptance check performed by VAH-9 on 2 May 1957. It had flown 61.8 hours since inspection. Maintenance records reveal no history of chronic airframe or systems malfunction.

32. The engines were two J57-P-10. They were installed on the aircraft at the time of production. They had operated a total of 69.2 hours. Review of maintenance records revealed no history of chronic malfunction.

33. The weather at the time of the accident was reported as two tenths cumulus at 3000 feet, seven tenths alto-cumulus at 10,000 feet, visibility twelve miles, wind from 180 degrees at five knots and moonlight. Weather is not considered a factor in this accident.

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34. During the investigation it was observed that the fleet working conditions are not compatible with the semi-tropical climate. The squadron was cramped for office and ready room space. These conditions are aggravated by the high temperatures encountered during the working day. This working day normally begins at 0700 and usually extends into the hours of darkness. The squadron spaces are not air-conditioned but what is even more deplorable is the lack of electric fans or air circulating equipment of any nature. It was noted that some of the buildings such as the Navy Exchange, Administration Building, and a training building were air-conditioned. The need for a comfortable area in which to work, plan flights, and conduct training is self-evident. (The greatly increased performance of aircraft makes the quality of human performance even more critical). The accumulated loss in physical efficiency that results from working in a hot, noisy, uncomfortable enviornment has long been recognized as contributing to unsafe acts. We have learned from experience that whenever our machines are harmfully affected by environmental factors that they must be protected. The extremely high physical demands coupled with the responsibility now placed on our jet pilots warrants this type of protective consideration being given these men instead of a protection which is considerable less adequate. Pilots should receive not equal but greater consideration than their aircraft. The physical comfort needs of fleet operating squadrons should be given at least equal priority with shore establishments when allocation of funds and equipment is made.

SUBSTANTIATING DATA

35. The following data pertaining to the independent investigation of this aircraft accident by the U.S. Naval Aviation Safety Center is on file at the Naval Aviation Safety Center:

A. Dispatches

B. Orders Directing the Investigation

C. Personnel Assisting in the Investigation

D. NASC Information Questionnaire

E. Wreckage Diagram

F. Witness Statements

G. Maintenance Officer's Statement

H. Air Research Report of ADU Inspection

I. O&R Norfolk DIR Report

J. Douglas Aircraft Corporation Report of Aileron Actuator Inspection

K. Medical Officer's Analysis of Injuries

"SPECIAL HANDLING REQUIRED IN ACCORDANCE WITH PART VII OF OPNAVINST 3750.6B"

Aer-MA-610/225

FIFTH ENDORSEMENT on SUPPLEMENTARY INFORMATION to VAH-9, AAR ser 2-57, concerning A3D-2 BuNo 138956, occurring 6 July 1957, pilot WHITE

From: Chief, Bureau of Aeronautics
To: Chief of Naval Operations
Via: Commander, U.S. Naval Aviation Safety Center

24 APR 1958

Subj: Aircraft Accident Report; forwarding of

1. Forwarded, concurring with the opinion of the Aircraft Accident Board.

(b) (6)
[redacted]

By direction.

Copy to:
COMNAVAIRLANT
COMFAIRJAX
COMHATWING-1
COMHATWING-2
CO, VAH-9

RECEIVED
APR 30 1958
NAVAL AVIATION
SAFETY CENTER

13

ORIGINAL

FF7-1/15:rdd
A25
Ser 2551
17 OCT 1957

THIRD ENDORSEMENT on SUPPLEMENTARY INFORMATION to VAH-9 AAR ser 2-57, concerning A3D-2 BUNO 138956, occurring 6 July 1957, pilot WHITE

From: Commander Fleet Air, Jacksonville
To: Chief of Naval Operations (OP-57)
Via: (1) Commander Naval Air Force, U. S. Atlantic Fleet
(2) Chief, Bureau of Aeronautics (MA-61)
(3) Director, U. S. Naval Aviation Safety Center

Subj: VAH-9 Aircraft Accident Report ser 2-57; supplementary information on

1. Forwarded, concurring with the opinion of the board.

W. G. SWITZER

Copy to:
NAVAVSAFCEN (2)
BUAER (MA-61) (2)
COMHATWING ONE
COMHATWING TWO
CO, VAH-1
CO, VAH-3
CO, VAH-5
CO, VAH-9
BAR ELSEGUNDO

15

ORIGINAL

HATWING ONE
N1:tn
Serial: 1231

10 OCT 1957

SECOND ENDORSEMENT on SUPPLEMENTARY INFORMATION to VAH-9 AAR 2-57 concerning A3D-2 BUNO 138956 occurring 6 July 1957, Pilot WHITE

From: Commander Heavy Attack Wing ONE
To: Chief of Naval Operations (OP-57)
Via: (1) Commander Fleet Air, Jacksonville
(2) Commander Naval Air Force, U. S. Atlantic Fleet
(3) Chief, Bureau of Aeronautics (AER 512)
(4) Director, U. S. Naval Aviation Safety Center

Subj: VAH-9 Aircraft Accident Report 2-57; supplementary information on

1. Forwarded, concurring with the opinion of the board.

(b) (6) [redacted]

By direction

Copy to:
BUAER (AER512)
DIRNAVAVSAFCEN
CO VAH-1
CO VAH-3
CO VAH-5
COMHATWING TWO
BAR ELSEGUNDO
CO VAH-9

16

VAH9/00:WRH
A25
Ser: 829
12 September 1957

FIRST ENDORSEMENT on SUPPLEMENTARY INFORMATION to VAH-9, AAR 2-57 concerning A3D-2, BuNo 138956 occurring 6 July 1957, Pilot WHITE

From: Commanding Officer, Heavy Attack Squadron NINE (VAH-9)
To: Chief of Naval Operations (OP-57)
Via: (1) Commander Heavy Attack Wing ONE
(2) Commander Fleet Air, Jacksonville
(3) Commander Naval Air Force, U. S. Atlantic Fleet
(4) Chief, Bureau of Aeronautics (AER-512)
(5) Director, U. S. Naval Aviation Safety Center

Subj: VAH-9 Aircraft Accident Report 2-57; supplementary information on

1. Forwarded, concurring with the opinion of the board.

W. R. HAZLETT

Copy to:
BUAER (AER-512)
DIRNAVAVSAFCEN
CO, VAH-1
CO, VAH-3
CO, VAH-5
COMHATWING TWO
BAR EL SEGUNDO

SUPPLEMENTARY INFORMATION to VAH-9, AAR 2-57 concerning A3D-2, BuNo 138956 occurring 6 July 1957, Pilot WHITE

From: Aircraft Accident Board, Heavy Attack Squadron NINE (VAH-9)
To: Chief of Naval Operations (Op-57)
Via: (1) Commanding Officer, Heavy Attack Squadron NINE (VAH-9)
(2) Commander Heavy Attack Wing ONE
(3) Commander Fleet Air, Jacksonville
(4) Commander Naval Air Force, U.S. Atlantic Fleet
(5) Chief, Bureau of Aeronautics (AER-512)
(6) Director, U.S. Naval Aviation Safety Center

Subj: VAH-9 Aircraft Accident Report 2-57; supplementary information on

1. Disassembly and inspection of the J-57 engines involved in the crashed aircraft was completed at O&R Norfolk, Virginia. It was determined from this inspection that both engines were turning at high power at the time of impact and there was no evidence of any malfunctioning parts.

2. The surface control boost actuators were examined by the Douglas Aircraft Company and were found to be normal in all respects. There was no evidence disclosed of malfunctioning parts.

3. It is the opinion of the Aircraft Accident Board that no further investigation is warranted. The lack of evidence to support any positive conclusions still exists and therefore, no further information can be added to the original AAR.

E. R. Horrell

E. R. HORRELL, CDR, USN (senior member) — Executive Officer, Unit Billet

(b) (6) [redacted]

(b) (6) [redacted] LCDR, USN (member) — Administrative Officer, Unit Billet

(b) (6) [redacted]

(b) (6) [redacted] LT, USN (member) — Landing Signal Officer, Unit Billet

(b) (6) [redacted]

(b) (6) [redacted] LT, USN (member) — Communications Officer, Unit Billet

ORIGINAL

Code 101
10 September 1957

FOURTH ENDORSEMENT on VAH-9 AAR ser 2-57, 3D-2, 138956,
accident occurring 6 JUL 57, pilot WHITE

From: Commander Naval Air Force, U. S. Atlantic Fleet
To: Chief of Naval Operations (Op-57)
Via: (1) Chief, Bureau of Aeronautics (Ma-61)
(2) Director, U.S. Naval Aviation Safety Center

Subj: Aircraft Accident Report

1. Forwarded, concurring in the findings of the Aircraft Accident Board and in general in the remarks contained in endorsements thereto.

2. The matter of carrying minimum crew during FCLP and carqual will be the subject of separate correspondence.

(b) (6)

By direction

Copy to:
DNASC (2)
COMFAIRJAX
COMHATWING ONE
CO, VAH-9

20

ORIGINAL

ORIGINAL

FF7-1/15:rdd
A25
Ser 2016
20 August 1957

THIRD ENDORSEMENT on VAH-9 AAR ser 2-57, involving A3D-2 BUNO 138956, accident occurring 6 July 1957, pilot WHITE

From: Commander Fleet Air, Jacksonville
To: Chief of Naval Operations (OP-57)
Via: (1) Commander Naval Air Force, U. S. Atlantic Fleet
(2) Chief, Bureau of Aeronautics (MA-61)
(3) Director, U. S. Naval Aviation Safety Center

Subj: Aircraft Accident Report; forwarding of

1. Forwarded, concurring with the corrective action indicated in the first endorsement.

2. The paragraph "OTHER AIRCRAFT" on page 12 of the aircraft accident report is believed to contain a clerical error. The second sentence reads, "There was a report of a fourth aircraft southwest of the field which could not have startled LT WHITE, etc.". In view of the meaning of the third sentence it is thought that the word "not" should be deleted from the second sentence of subject paragraph.

W. G. SWITZER

Copy to:
NAVAVSAFCEN (2)
BUAER(MA-61) (2)
COMHATWING-1
CO, VAH-9

HATWING-1
N1:ln
Ser: 964
12 AUG 1957

SECOND ENDORSEMENT on VAH-9 AAR 2-57 concerning A3D-2 BuNo 138956, accident occurring 6 July 1957, Pilot WHITE

From: Commander Heavy Attack Wing ONE
To: Chief of Naval Operations (Op-57)
Via: (1) Commander Fleet Air, Jacksonville
(2) Commander Naval Air Force, U. S. Atlantic Fleet
(3) Chief, Bureau of Aeronautics (AER 512)
(4) Director, U. S. Naval Aviation Safety Center

Subj: Aircraft Accident Report; forwarding of

1. Forwarded.

2. The action taken by the commanding officer is concurred in. In addition all commanding officers of this command have been directed to utilize the minimum crew commensurate with mission requirements.

3. The investigation by the O & R Norfolk and the Douglas Aircraft Co. will be carefully monitored by this command. Any conclusions or recommendations resulting from these investigations will be forwarded at a later date.

J. R. Reedy

J. R. REEDY

Copy to:
BUAER (AER 512)
DIRNAVAVSAFCEN (2)
VAH-9

22

17

ORIGINAL

VAH9/00:JTM
A25
Ser: 725
29 July 1957

FIRST ENDORSEMENT on VAH-9 AAR 2-57 concerning A3D-2 BuNo 138956, accident occurring 6 July 1957, Pilot WHITE

From: Commanding Officer, Heavy Attack Squadron NINE (VAH-9)
To: Chief of Naval Operations (Op-57)
Via: (1) Commander Heavy Attack Wing ONE
(2) Commander Fleet Air Jacksonville
(3) Commander Air Force, U. S. Atlantic Fleet
(4) Chief, Bureau of Aeronautics (AER512)
(5) Director, U. S. Naval Aviation Safety Center

Subj: Aircraft Accident Report; forwarding of

1. Forwarded.

2. Since the cause of this accident is undetermined at this time, no meaningful conclusions can be drawn. Only one thing is certain: the pilot was in serious trouble almost from the moment he became airborne following his fifth FCLP pass. The possibilities that might account for the erratic flight path of the aircraft have been explored in the basic report. Although investigation of various aircraft components has not been completed, it appears at this point that this aircraft was functioning properly. Assuming this to be the case, the pilot lost control for some other reason. A stall is the most obvious situation which would result in the aircraft behaving as it did. However, as pointed out in the basic report, the A3D has excellent stall warning characteristics. With power off and wings level throughout a speed range of approximately twenty (20) knots prior to actual stall, airframe buffet occurs. The buffet range is somewhat less with power on and in a turn, but is still considerable. The buffeting becomes progressively more severe as the stall is approached. Application of power prior to actual stall rapidly takes the aircraft outside the buffet range with little or no loss of altitude. Flight tests were conducted after the accident in an attempt to duplicate the situation existing in this instance. The aircraft, in landing configuration, was placed in a steeper than normal bank and allowed to decelerate. In every case normal airframe buffet occured, and in no case did the pilot experience any difficulty in recovery upon application of power. (b) (5)

(b) (5) [redacted]

3. The presence of four (4) crewmembers on board the aircraft is deserving of comment. It has been the experience of this command that three crewmembers are required to operate the A3D properly and safely. For FCLP, it has been the practice to substitute a second pilot for the Bombardier/Navigator.

SPECIAL HANDLING REQUIRED IN ACCORDANCE WITH PART VII, OPNAV INST 3750.6B

15 23

This allows two pilots to obtain a period of FCLP (approximately 6-8 landings each per flight, resulting in more efficient utilization. Furthermore, it has been very beneficial, from the point of training and standardization, to have two pilots fly together and observe each other's technique. It is felt that this practice is justified in flights of this type. The fourth crewmember, however, was not required for the successful accomplishment of the mission. MONACO, the observer, was not scheduled for the flight. He was under orders to duty involving flying, and on the night of the accident requested permission from the pilot to go on the flight. This permission was granted.

4. Since the specific cause of the accident has not been determined, corrective measures to prevent further accidents of this type are difficult to determine. However, the following action has been taken to lessen the the possibility and reduce the severity:

a. Only minimum crews (three crewmembers) will be employed during FCLP.

b. During touch and go landings, pilots will before turning, accelerate to at least 135 knots and will only employ as much angle of bank (normally a maximum of twenty (20) degrees) as is required to place them the proper distance abeam for the next downwind leg.

5. This report was not completed and forwarded within the time limit specified by OPNAV INSTRUCTION 3750.6B due to the squadron and most of the members of the Accident Board being embarked for carrier qualifications during the period 15-26 July 1957. However, an extension until 29 July 1957 was requested from and approved by the Controlling Custodian.

J. M. MILLER

24

SPECIAL HANDLING REQUIRED IN ACCORDANCE WITH PART VII, OPNAV INST 3750.6B

AIRCRAFT ACCIDENT REPORT

OPNAV FORM 3750-1 (REV. 11-55)
PAGE 1

See Instructions for completion prior to filling out

OPNAV REPORT 3750-1

PART I – GENERAL

SECTION A – IDENTIFICATION

1. AIRCRAFT ACCIDENT BOARD CONVENED BY: Heavy Attack Squadron NINE (VAH-9)
2. DATE OF ACCIDENT: 6 July 1957 TIME: 2037R
3. AAR SERIAL NO.: 2-57
4. TO: CHIEF OF NAVAL OPERATIONS (Op-57)
5. ENCLOSURES: (1) Plot of crash area
(2) Photographs
(3) Statements of witnesses
(4) Maintenance Officer's statement
(5) Aerology report
(6) NAS, Sanford Tower crash report
(7) Medical Officer's report
(8)
(9)
6. VIA: (1) Commander Heavy Attack Wing ONE
(2) Commander Fleet Air, Jacksonville
(3) Commander Air Force, Atlantic Fleet
(4) Chief, Bureau of Aeronautics (AER-512)
(5)
(6)
(LAST) DIRECTOR, U. S. NAV. AV. SAFETY CENTER
7. REPORTING CUSTODIAN *(if different than item number 1)*: SAME
8. ACTIVITY OPERATING AIRCRAFT *(if different than item 7)*: SAME
9. KIND OF FLT.: 3A3
10. TIME OF DAY: ☐ DAWN ☐ DAY ☐ DUSK ☒ NIGHT
11. LOCATION OF ACCIDENT: 1 mile so, NAS Sanford
12. ELEV. ABOVE SEA LEVEL: Approx 50 ft.
13. PLACE OF LAST TAKE-OFF: NAS, Sanford, Florida
14. CLEARED FROM: Local FCLP TO:
15. TYPE CLEARANCE: ☐ IFR ☒ VFR ☐ LOCAL ☐ OPERATIONAL ☐ AIRWAYS ☐ DIRECT ☐ OTHER, Specify:
16. TIME IN FLT.: 0 + 22
17. TYPE ACCIDENT: B5
18. PHASE OF FLIGHT: L

AIRCRAFT

19. MODEL	20. SERIAL NO.	21. DAMAGE TO AIRCRAFT	22. DOL. COST	23. AIRSPEED (kts)	24. A/C WT.
A3D-2	138956	☒ A. ☐ B. ☐ C. ☐ D.	$1,940,000	135-140	47,900 lbs

25. LIST MODEL, SER. NRS., REPORTING CUSTODIAN AND DAMAGE CLASSIFICATION OF ANY OTHER A/C INVOLVED *(complete separate OPNAV Form 3750-1 for each A/C)*: NONE

PILOT AND CO-PILOT

1. PERSONNEL	2. NAME *(last, first and middle initial)*	3. RANK/RATE	4. FILE/SERV. NO.	5. DUTY NO.	6. DATE DESIG. (NAVY)	7. DEGREE OF RATING	AGE
PILOT (PERSON AT CONTROLS AT TIME OF ACCIDENT)	WHITE, Henry C.	LT	(b) (6) redacted	1110	11-15-50	(b) (6) redacted	32 "A"
CO-PILOT	CARMAN, Charles W.	CDR	redacted	1110	1-1-43	redacted	36 "A"

8. PERSONNEL	9. OPERATIONAL FLT. TRAINER AVAILABLE?	USED?	10. UNIT TO WHICH ATTACHED	11. TYPE INSTRUMENT CARD
PILOT	☒ YES ☐ NO	☒ YES ☐ NO	Heavy Attack Squadron NINE	☒ STANDARD ☐ SPECIAL
CO-PILOT	☒ YES ☐ NO	☒ YES ☐ NO	Heavy Attack Squadron NINE	☐ STANDARD ☒ SPECIAL

SECTION B – PERSONNEL INFORMATION

12. PILOT, CO-PILOT, STUDENT EXP. TOTAL PILOT HOURS

ITEM	PILOT	CO-PILOT	STUDENT
ALL MODELS	1687.7	5072.5	
ALL MODELS IN LAST 12 MOS.	136.9	237.7	
ALL MODELS IN LAST 3 MOS.	84.2	114.8	
ALL SERIES THIS MODEL	58.9	88.0	
ALL SERIES THIS MODEL, LAST 12 MONTHS	58.9	88.0	
ALL SERIES THIS MODEL, LAST 3 MONTHS	58.9	76.7	

ITEM	PILOT	CO-PILOT	STUDENT
CV LANDINGS DAY/NIGHT	203/8	20	
FCLP LANDINGS DAY/NIGHT	223/7	Jun-Jul 63/12	
INSTRUMENT HOURS, LAST 3 MONTHS	23.9	29.2	
NIGHT HOURS, LAST 3 MOS.	11.7	8.9	
(jet aircraft only) TOTAL JET PILOT HOURS	123.1	124.3	
DATE LAST FLIGHT, ALL SERIES THIS MODEL	7/6/57	7/6/57	
DURATION LAST FLIGHT, ALL SERIES THIS MODEL	1.2	1.2	

18. LIST PERSONNEL

NAME *(last, first and middle initial)*	RANK/RATE	FILE/SERVICE NO.	ORG. TO WHICH ATTACHED	INJURY CODE	BILLET DESIGNATION
1. MONACO, Joseph J.	AO1	(b) (6) redacted	VAH-9	A	4/crew
2. SEAMAN, Eugene O.	AT2	redacted	VAH-9	A	3/crew
3.					
4.					
5.					

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(if additional space is necessary, attach additional sheet(s))

OPNAV FORM 3750-1 (REV. 11-55)
PAGE 2

AIRCRAFT ACCIDENT REPORT

OPNAV REPORT 3750-1

1. CEILING	2. VISIBILITY	3. WIND DIRECTION AND VELOCITY	4. TEMPERATURE AIR	OUTSIDE RUNWAY	5. DEW POINT	6. ALTIMETER SETTINGS
- - -	12 miles	180/5	60.6F		74.2	29.967

7. OTHER WEATHER CONDITIONS *(winds aloft, icing levels, state of sea etc., if pertinent to accident)*
W/V at 1500 ft. 210/15
30 ø 100 ø visibility very good with ½ moon.

SECTION C - CAUSE FACTORS (PRIMARY FACTOR AND SECONDARY FACTOR, IF ANY)

ITEM	P	S	ITEM	P	S	ITEM	P	S
PILOT ERROR			LANDING SIGNAL OFFICER ERROR			MATERIAL FAILURE OR MALFUNCTION		
CREW ERROR			OTHER PERSONNEL ERROR, Specify			MATERIAL INADEQUACY		
SUPERVISORY PERSONNEL ERROR			ADMINISTRATIVE ERROR			ROLLING AND PITCHING DECK/ROUGH SEAS		
MAINTENANCE PERSONNEL ERROR			AIRPORT OR CARRIER FACILITIES			UNDETERMINED	X	
SERVICING PERSONNEL ERROR			WEATHER			OTHER, Specify		

SECTION E - DEPLOYMENT

FOR ACCIDENTS ABOARD DEPLOYED CARRIERS *(Complete following Section on Pilot)*

1. DATE DEPLOYED	2. DAY-HOURS/LANDINGS LOGGED SINCE DEPLOYED	3. DAY-HOURS/LANDINGS LOGGED LAST 30 DAYS
4. INSTRUMENT HRS. LOGGED SINCE DEPLOYMENT	**5. NIGHT-HOURS/LANDINGS LOGGED SINCE DEPLOYED**	**6. NIGHT-HOURS/LANDINGS LOGGED LAST 30 DAYS**

PART II - MAINTENANCE, MATERIAL AND FACILITIES DATA

SECTION A - AIRCRAFT AND ENGINE DATA

1. AIRCRAFT HISTORY

DATE OF [illegible] Acceptance	SERVICE TOUR	MONTHS IN THIS TOUR	TOTAL NO. OF OVERHAULS	FLIGHT HRS. SINCE LAST OVERHAUL	FLIGHT HRS. SINCE ACCEPTANCE	TYPE CHECK LAST PERFORMED	FLIGHT HRS. SINCE LAST CHECK	NO. OF DAYS SINCE LAST CHECK
4-19-57	1	2	0	- - -	67.4	Acceptance	61.8	65

2. ENGINE HISTORY

	DATE OF [illegible]	ENGINE MODEL	SERIAL NO. OF ENGINE	TOTAL NO. OF OVERHAULS	FLIGHT HRS. SINCE LAST OVERHAUL	FLIGHT HRS. SINCE ACCEPTANCE	TYPE CHECK LAST PERFORMED	FLIGHT HRS. SINCE LAST CHECK	NO. OF DAYS SINCE LAST CHECK
NO. 1	3-13-56	J57P10	P605913	0	- - -	69.2	Acceptance	61.8	65
NO. 2	3-13-56	J57P10	P605914	0	- - -	69.2	Acceptance	61.8	65
NO. 3									
NO. 4									

3. GENERAL

a. DID FIRE OCCUR: ☐ BEFORE ACCIDENT ☒ AFTER ACCIDENT ☐ DID NOT OCCUR

b. DID EXPLOSION OCCUR IN FLIGHT? ☐ YES ☒ NO

c. CHECK IF APPLICABLE: ☐ AMP FUR SERIAL

d. HAS DIR BEEN REQUESTED? ☒ YES ☐ NO

e. FAILED COMPONENTS INVOLVED

CHECK BELOW ITEMS PRESENT IN THIS ACCIDENT

4. ATC MAINT. AND ENG. FACTORS

a. ☐ AIRCRAFT DESIGN
b. ☐ AIRCRAFT EQUIPMENT
c. ☐ MAINTENANCE
d. ☒ UNDETERMINED
e. ☐ TECHNICAL INSTRUCTION
f. ☐ OTHER, Specify
g. ☐ SURFACE FACILITIES
h. ☐ HUMAN ENGINEERING (e.g. cockpit configurations)

26

5. MISCELLANEOUS DATA

a. ALTITUDE AT MALFUNCTION	b. AIR SPEED (kts)	c. OPERATING TEMPERATURE	d. WEIGHT OF AIRCRAFT	e. [illegible]	f. KIND OF FUEL	g. FUEL PRESSURE
Approx 300-400'	130-135	- - - -	47,900	- - -	JP-3	- - -

h. EVIDENCE OF FUEL CONTAMINATION: NONE

i. CAUSE OF ENGINE [illegible] OR FLAMEOUT: Engine inspection still in progress

j. FUEL CONTROL REGULATOR/CARBURETOR *(List Stock and Ser. nos., give time since new or overhauled)*: NOT AVAILABLE

k. EXTERNAL STORES ABOARD A/C: NONE

(If additional space is necessary, [illegible] additional sheet(s))

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PAGE 3

AIRCRAFT ACCIDENT REPORT

OPNAV REPORT 3750-1

PART II – MAINTENANCE, MATERIAL AND FACILITIES DATA (Cont'd)

SECTION B – FACILITIES DATA

1. GENERAL: BASE FACILITIES INVOLVED OR CONSIDERED RELEVANT ON ACCIDENT IN THE AREA. THIS SECTION

a. ☐ CLEARANCE AUTHORITY	h. ☐ RUNWAY	o. ☐ EMERGENCY ARRESTING GEAR (Runway)
b. ☐ FLIGHT PLANNING INFORMATION SOURCE	i. ☐ WATER LANDING AREA	p. ☐ AIRCRAFT SERVICING, HANDLING & DIRECTING (Field or Ship)
c. ☐ LANDING AIDS (GCA, CCA, ILS, etc.)	j. ☐ APPROACH ZONE	q. ☐ CRASH AND RESCUE
d. ☐ TRAFFIC CONTROL TOWER (Field or Ship)	k. ☐ END ZONE	r. ☐ SEARCH AND RESCUE
e. ☐ APPROACH AND ENROUTE AIDS TO NAVIGATION	l. ☐ SHOULDERS	s. ☐ CATAPULT
f. ☐ RUNWAY WATCH	m. ☐ TAXIWAY	t. ☐ ARRESTING GEAR (Carrier)
g. ☐ LANDING SIGNAL OFFICER	n. ☐ PARKING AREA	u. ☐ BARRIER OR BARRICADE (Field or Ship)
w. ☐ OTHER, Specify.....		v. ☐ FLIGHT DECK

2. SHIPS DATA

a. EQUIPMENT INVOLVED: ☐ CATAPULT ☐ ARRESTING GEAR	b. PRESSURE SETTINGS	c. WIND OVER DECK	d. RELATIVE HEADWIND	e. APPROACH SPEED (SPN-12 READING)
f. MARK NUMBER	g. MODEL NO.	h. LOCATION ON SHIP	i. LAUNCHING BRIDLE AND CONFIGURATION USED	

j. CATAPULT/ARRESTING GEAR BULLETINS OR NOMOGRAMS USED

k. THIS PORTION SHALL BE COMPLETED WHENEVER (1) A MAJOR AIRCRAFT ACCIDENT INVOLVES ARRESTING GEAR, BARRIER AND/OR BARRICADE EQUIPMENT, OR (2) AN AIRCRAFT ACCIDENT INVOLVES MALFUNCTIONING OF ARRESTING GEAR, BARRIER AND/OR BARRICADE EQUIPMENT. MINOR ACCIDENTS OR ROUTINE DAMAGE TO CABLES, WELDINGS AND OTHER EXPENDABLE COMPONENTS NEED NOT BE REPORTED.

ENGAGED	DECK RUNOUT (FT.)	RAM TRAVEL (IN.)	CONTROL VALVE SETTINGS – CONSTANT PRESSURE: DOME (P.S.I.)	CONTROL VALVE SETTINGS – CONSTANT PRESSURE: RATIO	CONSTANT RUNOUT (WT. LBS.)	ACCUMULATOR PRESSURE (PSI)	COMMENTS (for cable failure specify number of landings and months in service)
DECK PENDANT							
DECK PENDANT							
BARRIER							
BARRIER							
BARRICADE							

PART III – REMARKS (continue on separate pages if necessary)

PART	SECTION	ITEM	
			Estimate of dollar cost of repair and damage to civilian property resulting from aircraft accident: $1,965.00. Government property: NONE

(b) (6)
(b) (6) LCDR, USN
Air Frames Officer

27

PART IV – SIGNATURES (INDICATE DATE SUBMITTED TO C.O.)

(b) (6)
(b) (6) CDR, USN Operations Off.
(senior member) UNIT BILLET

(b) (6)
(b) (6) LT, USNR, M.D.
(flight surgeon member)

(b) (6)
(b) (6) LT, USN, LSO
UNIT BILLET

(b) (6)
(b) (6)
(b) (6) LT, USN, Communications
(member) UNIT BILLET

THE ACCOUNT

SECTION V - THE ACCIDENT

Heavy Attack Squadron NINE (VAH-9) based at the Naval Air Station, Sanford, Florida had two mirror FCLP periods scheduled for Saturday night 6 July 1957. The first period was scheduled from 1930R to 2100R for three A3D-2 aircraft.

Since it is the squadron policy to fly two pilots per aircraft during each FCLP period, CDR CARLIN and LT WHITE were scheduled together for the first period. This policy enables each pilot to make approximately seven landings per period and splits the hop so as to realize maximum efficiency from each pilot. It has also been found that flying two pilots during FCLP's stimulates discussion of technique and has resulted in an over-all increase in training.

SEAMAN, AT2, was the third crewman assigned to the flight and NOWICO, AQ1, was added as a fourth crew observer.

The scheduled aircraft for the flight was squadron aircraft number 7; however, due to minor discrepancies found on Number 7, the pilots elected to take Number 12, bureau number 138956.

Because of the delay in changing aircraft, 12 "BREEZE" was not airborne until 2015R. Through radio reports to the squadron LSO at the mirror, it was definitely established that LT WHITE was the pilot for the first half of the period as the plane entered the FCLP pattern with the other two A3D's.

Runway 27 was the runway being used for the FCLP bounces with a surface wind from 180 degrees and 5 knots. Weather at the time consisted of a 3,000 ft. scattered layer with a high broken layer at 10,000 ft. Visibility was reported at 12 miles with a good horizon due to a bright almost half moon.

Because of the aircraft overweight condition, (fuel load prior to take-off was verified at 14,000lbs.) LT WHITE made two heavy load passes on the mirror without touch down which brought his weight well below the recommended gross weight for touch and go landings. (50,000lbs.) Commencing his third pass, he reported fuel aboard as 11,500 lbs (gross weight approximately 49,500 lbs.) and proceeded to fly what the LSO recorded as an OK pass to a touch down. His fourth and fifth approaches to touch down were considered good and recorded as OK by the LSO.

Following the fifth bounce, the aircraft was observed by the LSO to accelerate and climb normally after take-off, then observers on the station reported the aircraft in erratic flight consisting of a steep left and right bank on the up wind turn. Reports of witnesses in the general crash area show that the aircraft did not establish a down wind leg but continued its erratic flight path around to a final heading of about 235 degrees and crashed right wing down in a heavily wooded area after hitting the tops of several large trees. From the point of initial contact with the ground, the aircraft continued through the trees cutting a path approximately 35 to 40 feet wide and about 600 feet long before exploding, producing a fire ball that rose to a height of 100 to 200 feet.

SECTION V - THE ACCIDENT (CONT'D)

No transmissions were received from the aircraft following the last report of fuel load of 10,200 lbs and "meatball" report in the groove prior to the fifth landing. This information served to fix the estimated fuel load at the time of the crash (2037R) at 9,900 lbs., giving a total aircraft weight of 47,900 lbs.

The final crash area was situated approximately one mile south of the Naval Air Station and a few feet in from a dirt road. This made the crash readily accessible to the Station fire fighting equipment which arrived at the scene in a matter of a few minutes after the explosion occured.

There were no survivors from the accident. All four bodies were recovered at the immediate crash scene.

SECTION VI - DAMAGE TO AIRCRAFT

The aircraft was demolished by impact with trees and the ground. (Enclosure (2b)) Some small fires were started along the crash path and a moderate explosion and fire occurred in the area where the wing center section and fuselage fuel cells came to rest. The explosion and fire considerably increased the damage to parts in the main fire area.

Enclosure (1) contains a plot of significant and identifiable parts as they were found along the crash path.

Initial contact was made with the trees where the left wing clipped small limbs from a tree 80 feet from the ground. At 50 feet along the crash path the right wing, about 8 feet inboard from the tip struck a sturdy 18 inch diameter pine tree 40 feet above the ground. (Enclosure (2) figure (b)) The outer 8 feet of the right wing, slat and aileron were torn off. At the same time the left wing clipped the tops from another tree directly across the flight path at about 60 feet from the ground. The angle of bank at this point was about 25 degrees right wing down. At 124 feet past the sturdy pine tree the remainder of the right wing started dragging the ground and at the same time a 16 inch oak tree at the center line of the crash path was hit and broken off. Apparently the airplane was rotating to the right at this point as 50 feet further along a very large oak tree was hit and it tore into the left side of the airplane at about the left main gear. It appears that the empennage was severed from the airplane at this time and flew through the air to its final resting place at the end of the crash path. Some gouges in the earth 50 feet along the crash path from the tree which tore into the left side of the airplane indicate that the nose and main wheels and engines contacted the ground at a relatively shallow angle. At 160 feet further along and to the right side of the crash path the coils from around the liquid oxygen flask, located in the left hand nose compartment, were pressed into the ground. At this point, complete disintegration began as the airplane cartwheeled and or tumbled along the crash path.

SECTION VI - DAMAGE TO AIRCRAFT (CONT'D)

Both engines were torn free from the pylons. The right wing failed at the fold with the lock pins still in place. The left wing failed inboard of the pylon. The center section and right wing out to the fold continued intact to the end of the 600 foot path. (Enclosure (2) figure (c)) Both fuselage fuel cells came to rest and burned just ahead of this section of the wing. It appeared that an explosion of moderate force occurred in the right wing tank after it had ruptured at the seams. The vertical stabilizer failed to the right at its base below the folding hinges. The cockpit and fuselage areas were completely demolished and the insides dragged along with the center wing section by electrical wires and cables.

It is impossible to gage the speed between each point of impact, however it is believed that speed at initial impact was between 120 and 140 knots.

SECTION VII - THE INVESTIGATION

Statements of witnesses, (Enclosure (3)) both aviation personnel and civilians, were used to determine the flight path and actions of the airplane immediately preceeding the crash. There were several contradictory statements concerning the attitude, position and engine behavior of the airplane, therefore, after obtaining written statements , members of the board thoroughly questioned the witnesses and their statements were evaluated as to similiarily and feasibility. It is believed that some contradictions as to attitude and engine operation were caused by the witnesses observing the airplane at different times and that sounds from the engines were interrupted by intervening buildings or were heard distinctly different by persons at different angles from the airplane.

Using locations from which the various persons observed the airplane the flight path was determined to be quite erratic as indicated in enclosure (2) figure (a). Following an apparently normal touch and go the power was reduced and a left climbing turn was started toward the downwind leg. Witnesses reported the bank angle during this turn appeared greater than normal. After completing about 120 degree of turn the airplane was observed to "flip" into a steep bank to the right. A slow recovery was made from the right bank accompanied by a moderate descent. Attitude at the time of the turn reversal is judged to have been about 300 feet. Witnesses located on the air base lost sight of the airplane behind the trees as it continued descent to the small lake adjacent to the crash. At about this time witnesses located at the southern edge of the lake saw the airplane approaching from the northeast, at about tree top level and apparently in almost level turning flight. These witnesses observed the airplane only a few seconds before it struck the trees 40 feet above the ground in about a 25 degree right bank.

(b) (5)

[redacted]

A search of the ground along the flight path revealed nothing to have fallen from the airplane prior to contact with the trees.

A thorough inspection of all identifiable parts of the airplane was made at the crash scene. Particular emphasis was placed on inspections of all control surfaces and their actuating and attaching components, hydraulic, fuel and electrical system components, auxilliary drive units and main engines. Representatives from the various cognizant equipment manufacturers plus investigators from the the Naval Aviation Safety Center were called in to assist in these inspections.

On the scene inspection revealed the following:

a. Both engines were turning at impact, however it could not be determined locally whether they were windmilling or at full power. The engines were shipped to O&R Norfolk, Virginia for disassembly, inspection and report. To date no information has been received.

b. Both engine fuel control indices were set to maximum thrust position. This condition merely indicates that both power levers were at maximum and not necessarily that the engines were actually operating at full thrust.

c. Neither ignition timer appeared to have been running as they would have been had a re-light been attempted. Because of the construction of the units this finding is considered inconclusive.

d. Both pylon fuel valves were in the open position. These valves are controlled by the master engine switches.

e. Fuel shut-off valves betwen the feed tank and the engines were both open. These valves are controlled by the master engine switches and the crossfeed switch.

f. Crossfeed valve was closed.

g. The operating condition of the high pressure engine driven pumps contained within the engine fuel control units was not determined. This information will be supplied when received in the report from O&R Norfolk.

SECTION VII - THE INVESTIGATION (CONT'D)

h. The operating condition of the fuel boost pumps was not determined. One pump was almost destroyed in the fire following the crash. As the engines in the A3D will operate normally at full thrust at low altitude without fuel boost the operating condition of these pumps is not considered important.

i. Both auxilliary drive units were apparently operating at normal speed at impact. One unit recovered away from the fire area did not indicate other than normal temperature in the ADU compartment.

j. There are two utility system hydraulic pumps and two surface control boost pumps connected mechanically to the auxilliary drive units. All four pumps were recovered and inspection revealed nothing to indicate abnormal operation.

k. All surface control boost systems were found disconnected however these disconnects are cable operated and would have been disconnected as the airplane tore apart.

l. The surface control boost actuators were recovered and inspected, however it could not be determined locally if they were functioning normally at time of impact. The actuators were sent to Douglas Aircraft Company for a more detailed analysis. This information will be forwaded when received.

m. Because of the manner and sequence in which the airplane came apart and struck large limbs of trees it was impossible to determine control positions at impact.

n. Lateral trim position could not be determined.

o. Rudder trim was neutral and the actuator was normal.

p. Longitudinal trim (horizontal stabilizer) was found in the full nose up position. This is not considered too unusual as normal trim during a mirror approach is almost full nose up. It is possible by reducing thrust after a touch and go and keeping the speed near the approach speed throughout, to fly a full pattern with full nose up trim with only light longitudinal control forces. At speeds above 130 knots the longitudinal control force required to maintain normal flight becomes uncomfortable without retrimming from the full up position. There were no reports of the airplane being in a steep climb at any time prior to the crash.

q. Aerodynamic slats were apparently working normally. Five FCLP approaches had been made just prior to the crash with no comment from the crew concerning malfunctioning slats.

SECTION VII - THE INVESTIGATION (CONT'D)

r. Spoiler actuators and control valves were apparentely normal. The spoiler accumulators were found still containing normal pressure.

s. Both wing and tail fold pin locks were found in the locked position.

t. The AC and DC generators are connected mechanically to the auxiliary drive units and inspection indicated the generators were running at time of impact. All witnesses saw the running lights (DC operated) burning.

u. The center control pedestal (Enclosure (2) figure (d)) was found and the switches and controls were found in the following positions:

1. Both power levers in the full open position

2. Both master engine switches, under guards, in the ON Position

3. Landing gear control down. The landing gear was actually down at impact.

4. Gust locks, disengaged.

5. Speed brakes, in.

6. Flap control, up. The postion of the flaps however was determined to be full down by other evidence.

7. Tail hook control, broken loose and in the down position.

8. Hytrol switch, on.

9. Manual fuel cg control valve in normal.

10. No. 2 AC generator switch in the run position.

v. The drag chute was found in the packed position at the scene of the crash.

3. Pieces of the cockpit rug, padding, pilots equipment and the like which were spread among the wreckage were examined, there was no evidence to indicate there had been a cockpit fire or explosion prior to or halfway up the wreckage path.

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SECTION VIII - THE ANALYSIS

At this writing, the actual cause of the accident is unknown. Immediate investigation at the crash scene revealed nothing to indicate that any equipment was operating other than normally at the time of the crash. Further investigation of such things as engines, fuel controls, aileron boost actuators and control valves and the rudder and elevator boost actuators and control valves is currently being carried on by O&R Norfolk and the Douglas Aircraft Company, El Segundo, California. The results will be forwarded when received. There are however other possibilities which would tend to explain the erratic flight path of the airplane. These are discussed below.

ENGINE FAILURE

The known flight path of the aircraft would have been highly improbable to attain with a left engine failure.

(b) (5) [redacted]

(b) (5) There had been no engine discrepancies listed on any recent yellow sheets. In addition, it should be pointed out that at a gross weight of 48,000 pounds which was approximately the gross weight of the aircraft at the time of crash, other squadron pilots have made simulated single engine waveoffs from approach speed with no real difficulty. Normally, in this condition a rudder pedal force of from 150 to 200 pounds is required without any application of rudder trim.

STALL

Other pilots of this squadron who have flown FCLP's with LT WHITE commented that he flew his pattern from take-off to landing at a slow speed, but always above the buffet zone. They further stated that he religiously checked the buffet just prior to the 180 degree position. He was also known to have used a full 6 degree nose up trim throughout his pattern. Under these conditions and adding a very steep bank, a stall condition could occur.

However there is excellent warning in the form of airframe buffet to warn of impending stall. Also, with full power application, recovery from a stall condition is excellent due to the rapid acceleration characteristics of the airplane. It is possible that a stall occurred however it is felt improbable that an immediate and rapid recovery would not have been made with application of maximum thrust.

VERTIGO

There is little reason to believe that the pilot experienced vertigo. The moon was in the southeast at an altitude of about 30 degrees and 5/8 full. In addition there are many groups of lights in the direction he was heading plus the glow from the city of Orlando. Visibility has been placed at 12 miles and other pilots flying at the same time state that objects such as trees, houses, open fields and lakes were clearly visible. (Enclosure (3))

PILOT

LT WHITE was considered an excellent officer, His habits were very good regarding alcohol and smoking. His interest in the Heavy Attack program was enthusiastic. He had recently volunteered to take over the task of Special Weapons Effects Officer because he had instructed on this subject at the Fleet Training Center, Norfolk, Virginia, and felt he could benefit the squadron with his knowledge. He was a graduate of the Aviation Safety Officers course at the University of Southern California. His primary duty was squadron safety officer and he had developed and was prosecuting an aggressive safety program. His mental attitude toward flying and his collateral duties were healthy and aggressive.

LT WHITE was a graduate of the Naval Academy at Annapolis in the Class of 1949. He completed flight training at Pensacola in November 1950 and was assigned to VA-45 flying AD type airplanes. His tour of duty in VA-45 lasted until May 1954 and during this period he accumulated about 1000 hours flight time in ADs and made 203 day and 8 night carrier landings. He spent a tour on the USS LAKE CHAMPLAIN operating in Korean waters. Following his tour in VA-45 he was assigned duty as Special Weapons Instructor at the Fleet Training Center, Norfolk, Virginia. During this two year period he flew a total of 200 hours in SNBs and ADs. From this duty he went to the Aviation Safety Officers course at USC and JTTU which he successfully completed just prior to reporting to VAH-9. After reporting to this squadron he attended the Heavy Attack Training Unit for a two (2) month course in Special Weapons and then successfully completed the jet instrument training course at FAWTU at NAS Jacksonville, Florida. He had no previous accidents nor reports of flying violations. Because of his carrier background and his recent training in jet type airplanes he was considered an excellent prospective Heavy Attack Plane Commander and an asset to the squadron.

LT WHITE was considered a very capable A3D pilot during his familiarization training. His knowledge of the airplane's systems was not outstanding but was considered very satisfactory. As Safety Officer he very often engaged in discussion with more experienced A3D pilots concerning the proper procedures to use during emergencies. He had received the normal amount of training concerning single engine approaches, loss of systems and the flight characteristics of the A3D.

The Flight Surgeon states in his report, enclosure (7) that LT WHITE should not have been overtired however, his wife stated that he had stumbled when arising from the dinner table the evening of the crash and had commented that he was tired.

SECTION VIII - THE PILOT (CONT'D)

A review of records revealed that LT WHITE had worked 18 hours on 1 July 4 hours on 2 July, 18 hours on 3 July, away from the squadron on 4 July and 18 hours again on 5 July. He had slept late on 4 July but had slept only 5 hours the night prior to the accident after having flown two FCLP periods and arriving home about 0130. His wife also stated that he had worked quite hard at home on the day of the accident but had slept about 1 hour in the afternoon. LT WHITE was the squadron Safety Officer and very safety conscious and it is felt he normally would not have flown in an overtired condition. However, the squadron was pressed for time to be ready for Carquals and he no doubt felt that to drop out for a night would jeopardize his chances to qualify. It is felt that LT WHITE was physically tired prior to flying, however his satisfactory performance during the five approaches prior to the accident would indicate that his capability was not unusually impaired.

CO-PILOT

CDR CARMAN who was flying in the B/N seat where there are no controls was a very experienced naval aviator. He had demonstrated excellent flying ability in the A3D. His knowledge of the airplane and its systems was very good. CDR CARMAN was a mature and stable officer and it is felt that although he had no controls, his advice during any emergency should have been helpful to the pilot.

OTHER AIRCRAFT

Including the aircraft that crashed there were three A3D's in the FCLP pattern. The positions of the other two aircraft were "on final" and the "180". There was a report of a fourth aircraft south west of the field which could (not)? have startled LT WHITE and caused him to make a radical change of course with subsequent change in attitude. However it has been established that the aircraft was at a distance of at least 3 miles and it is not believed that it had any bearing on the accident.

FUEL STARVATION OR MISMANAGEMENT

The aircraft on take-off had 14,300 pounds of JP-3 fuel aboard of which 8,775 pounds were in the aft tank. The pilot called in his fuel each time at the 180 degree position and his last call prior to the crash was 10,200 pounds. Assuming that he burned 300 more pounds to the point of impact, he crashed with approximately 9,900 pounds of fuel. Normal cg operation would distribute the fuel 6500 pounds aft and 3400 pounds forward. Complete malfunction of the cg system preventing fuel from being transferred aft would have, based on his actual reports still left 4375 pounds of fuel in the aft feed tank. The fact that his previous passes were normal in all respects would preclude any cg malfunctions. Based on the maximum fuel rate even at full power, the aft tank could not have run out of fuel at the time of the crash.

SECTION VIII - THE ANALYSIS (CONT'D)

SAFETY EQUIPMENT

1. Shoulder harness, lap belt, inertia reel.

In every case, these items were found properly used (i.e., safety buckles still fastened) and in every instance the harness webbing and fittings were intact. The forces imposed on these items resulted in their being torn away from their seat fastening postion (i.e., inertia reel ripped away from seat but no failure of actual webbing or its fittings). It is felt that this equipment was properly used but that the forces sustained were far greater then the design limits.

2. Helmet

Three of the crew wore the new H-5 helmets, the other crewmember wearing an H-4. Two of the H-5 helmets were relatively intact intact, one having the chin strap torn loose from its mounting screw, the other helmet somewhat shattered on its left lateral aspect. The third H-5 helmet was knocked apart and scattered in the early cockpit debris. As for protection, every helmet was off the skull at the accident scene, and all crewmembers had multiple comminuted skull fractures. It is to be noted that in FCLP, the crewmembers are wearing their headgear for maximum protection, including wearing an A-13 mask attached to the helmet. The forces which caused removal of the helmets are not evident.

3. Oxygen masks.

Two of the A-13 masks were torn off and found scattered in the early cockpit debris, minus the webbing and metal web holders. The other two masks were also torn off but were found closer to the crewmembers (2/N and 4th crewman area)

4. Shoes.

Three of the crewmembers were the usual boondocker type of shoe. Two shoes of one member, and one shoe of another crewmember were torn off. The pilot wore low-cut shoes, and these were also torn off. (He had spent one week recently at survival school, and probably did not wear his boondockers secondary to their having been wet with resultant discomfort on return from survival school)

5. Flight Suit

All were the summer flying suit. This gave essentially no protection from burning fuel. (i.e., the only unburned body portions were those in contact with the ground)

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SECTION VIII - THE ANALYSIS (CONT'D)

SAFETY EQUIPMENT

6. Flying gloves

None were worn by any of the crewmembers. In a non-fatal fire of this type, it is possible that gloves would make the difference between a functioning hand or a badly burned functionally useless hand. All crewmembers should be encouraged to wear their gloves on all flights.

7. Seats

The fourth crewmember seat is designed to tolerate a 20G load. The other seats should tolerate a 40G load. It seems likely that these seats tolerate a lateral load very poorly, or it may be that the shearing forces were of extreme nature. The seats in every instance were found close to the final resting point of the crewmembers. The seats were essentially torn apart.

8. Parachutes

None of the four crewmembers were strapped in their parachutes at the time of the crash. This is based on ditching drills which dictated that for ditching, the personnel have as little encumberance as possible in order to expedite the actual ditching of the aircraft.

SECTION IX - CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Because of the nature of this accident and the lack of evidence to support any realistic conclusions, none are given at this time. If any further information is disclosed by the continuing investigation, conclusions reached as a result of this information will be forwarded.

Recommendations

None.